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AUTHOR Moodie, Allan G.
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ABSTRACT

During 1972-73, the Direct Instructional System for Teaching and Remediation (DISTAR) Language I Program, a series of instructional programs developed to teach children the basic skills and concepts in reading, arithmetic, and language, was used in two of the three kindergarten classes at Seymour Elementary School. The three kindergarten classes were used in the study. In one class the parents of the children spoke little or no English at home. The second class consisted of children whose parents spoke English at home. The children in the third class used no DISTAR materials and consisted of children whose parents also spoke English at home. The children represented different racial and cultural backgrounds, but approximately one-half of the sample were Chinese Canadians. During early March, each kindergarten teacher administered a pictorial test to measure the pupils' grasp of the major concepts in the DISTAR Language I Program. From the results, four comparisons were made. In only one of the four comparisons was the difference between the group scores statistically significant; namely, between English speaking parents' children who were in the DISTAR Program and those not using the DISTAR materials. See TM003468 for a related document. (RC)

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RESEARCH REPORT

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A. INTRODUCTION

DISTAR¹ is a series of instructional programs developed by Dr. S. Engelmann and his staff at the University of Illinois to teach young children the basic skills and concepts in reading, arithmetic and language. The DISTAR programs have been used extensively and are widely acclaimed throughout the U. S. A. with culturally disadvantaged children, older retarded pupils, children with language difficulties and pre-school children.

B. THE SCHOOL PROGRAM

During 1972-73 the DISTAR Language I Program was used in two of the three kindergarten classes at Seymour Elementary School. The third kindergarten class did not use DISTAR materials in language arts instruction.

C. THE RESEARCH SAMPLE

In this study the three kindergarten classes were assigned the letter designations "X", "Y" and "Z". Class "X" which used the DISTAR program consisted of children whose parents spoke little or no English at home. Class "Y" also used the DISTAR language arts materials but this group, unlike the previous class, consisted of children whose parents generally spoke English at home. The third kindergarten group which is designated "Z" in this report did not use any DISTAR materials like the other classes but this group enrolled youngsters whose parents generally spoke English at home.

Although the children in these classes have different racial and cultural backgrounds, the largest proportion (approximately one-half of the research sample) are Chinese Canadians.

D. THE RESEARCH STUDY

A pictorial test (see Appendix A) was devised by the Planning and Evaluation Department to measure pupils' knowledge of the major concepts in the DISTAR Language I Program. To assess mainly conceptual knowledge, the illustrations and oral questions of the evaluative instrument were made intentionally different from the DISTAR materials.

During early March, each kindergarten teacher administered the 20-item instrument to her pupils. The test scores were submitted by the teachers for statistical analyses at the Vancouver School Board.

¹ DISTAR (Direct Instructional System for Teaching and Remediation) is published by Science Research Associates, Inc., Chicago, Illinois, 1969.

E. THE RESEARCH RESULTS

Of a possible score of 20 marks the means or average test scores in the following classes were:

	<u>Mean Score</u>
Class "X"	18.0
Class "Y"	18.6
Class "Z"	17.4

Most pupils received relatively high scores, even though there were three months of kindergarten instruction yet to be completed before Grade 1. At the time that the test was administered, the pupils in classes "X" and "Y" had not studied the following concepts in their DISTAR program:

- the superlative "shortest" as measured by question 6,
- the superlative "widest" as measured by question 11,
- the verb tense "has climbed" as measured by question 17,
- the multiple attribute "striped" and geometric figure "rectangle" as measured by question 20.

Statistical analyses were made by using "t" tests to determine if the differences in scores between classes were significant. Statistical comparisons were made between the following classes.

- classes "X" and "Y" (see Table I)
- combined classes "X" and "Y" with class "Z" (see Table II)
- classes "X" and "Z" (see Table III)
- classes "Y" and "Z" (see Table IV)

As shown in Table I the differences in test scores between classes "X" and "Y" which both used the DISTAR Language I Program were not statistically significant, even though the class "Y" children of English-speaking parents received slightly higher scores than class "X" youngsters whose parents spoke little or no English at home.

However, both groups "X" and "Y" received slightly higher scores on the average than class "Z" which did not use DISTAR materials. Nevertheless, the test scores for combined classes "X" and "Y" were not significantly different statistically from class "Z" (see Table II).

In Table III the scores of class "X" which used the DISTAR Language I Program and contained children whose parents spoke little or no English at home were not statistically significantly better than the scores received by class "Z" which did not use the DISTAR materials but consisted of children whose parents generally spoke English at home.

However, in comparing children from English-speaking homes, class "Y" which used the DISTAR program received significantly higher scores (statistically significant at the .05 level) than did class "Z" which did not use these materials (see Table IV). In only one of the four comparisons was the difference between the group scores statistically significant; namely, between English-speaking parents' children who were in the DISTAR Language I Program and those not using the DISTAR materials.

ACKNOWLEDGMENT

The Department of Planning and Evaluation gratefully acknowledges the cooperation and assistance from:

- the principal of Seymour Elementary School, and
- the three kindergarten teachers who administered and scored the Test of Concepts in the DISTAR Language I Program

TABLE I: ANALYSIS BY "t" TEST OF RAW SCORES RECEIVED BY KINDERGARTEN PUPILS WHO USED THE DISTAR LANGUAGE I PROGRAM IN CLASSES "X" AND "Y"

	Test of Concepts in the DISTAR Language I Program	
	Class "X" Used DISTAR Language I Program (Children whose parents speak little or no English at home)	Class "Y" Used DISTAR Language I Program (Children whose parents generally speak English at home)
Possible Score	20	20
No. of Students	18	22
Mean Score	18.0	18.6
Standard Deviation	1.3	1.1
Difference Between Means	0.6	
"t" Value	1.60 (n.s.d.)	

Legend: n.s.d. -- no significant difference

TABLE II: ANALYSIS BY "t" TEST OF RAW SCORES RECEIVED BY KINDERGARTEN PUPILS IN COMBINED CLASSES "X" AND "Y" AND IN CLASS "Z"

	Test of Concepts in the DISTAR Language I Program	
	Combined Classes "X" and "Y" Used DISTAR Language I Program (Children whose parents speak little or no English at home or whose parents generally speak English at home)	Class "Z" Did Not Use DISTAR Language I Program (Children whose parents generally speak English at home)
Possible Score	20	20
No. of Students	40	17
Mean Score	18.4	17.4
Standard Deviation	1.2	2.0
Difference Between Means	1.0	
"t" Value	1.86 (n.s.d.)	

Legend: n.s.d. -- no significant difference

TABLE III: ANALYSIS BY "t" TEST OF RAW SCORES RECEIVED BY KINDERGARTEN PUPILS IN CLASSES "X" AND "Z"

	Test of Concepts in the DISTAR Language I Program	
	Class "X" Used DISTAR Language I Program (Children whose parents speak little or no English at home)	Class "Z" Did Not Use DISTAR Language I Program (Children whose parents generally speak English at home)
Possible Score	20	20
No. of Students	18	17
Mean Score	18.0	17.4
Standard Deviation	1.3	2.0
Difference Between Means	0.6	
"t" Value	1.08 (n. s. d.)	

Legend: (n. s. d.) -- no significant difference

TABLE IV: ANALYSES BY "t" TEST OF RAW SCORES RECEIVED BY KINDERGARTEN PUPILS IN CLASSES "Y" AND "Z"

	Test of Concepts in the DISTAR Language I Program	
	Class "Y" Used DISTAR Language I Program (Children whose parents generally speak English at home)	Class "Z" Did Not Use DISTAR Language I Program (Children whose parents generally speak English at home)
Possible Score	20	20
No. of Students	22	17
Mean Score	18.6	17.4
Standard Deviation	1.1	2.0
Difference Between Means	1.2	
"t" Value	2.33*	

Legend: *--significant at the .05 level

ED 088912

APPENDIX A

TEST OF CONCEPTS IN THE DISTAR LANGUAGE I PROGRAM

TM 003 468

TEST OF CONCEPTS IN THE DISTAR LANGUAGE I PROGRAM

Instructions: We are going to look at pictures and mark X's on some of them. This is how you make an "X". (Pupils will be allowed to practise making X's on the back of the test booklet.)

1. In the first box are pictures of three things that people wear. These things are a shoe, a hat, and a sock. Mark an X on the shoe. (repeat)
2. In the next box are three things that are in your home. Mark an X on the table. (repeat)
3. In this box are some glasses. Put an "X" on the empty one. (repeat)
4. Place an "X" on the girl who is walking. (repeat)
5. Which is the long pencil? (repeat)
6. Which is the shortest tree? (repeat)
7. Which of these would you wear on your head? (repeat)
8. Put an "X" on the handle of the wagon. (repeat)
9. Which animal is in front of the cat? (repeat)
10. Which fish is between the other fishes? (repeat)
11. Which tree has the widest trunk? (repeat)
12. Which animal is not on the ground? (repeat)
13. Which ball is on the chair? (repeat)
14. Which animal cannot fly? (repeat)
15. Put an "X" on the boy's leg. (repeat)
16. Which of these things can you eat? (repeat)
17. Which boy has climbed the stairs? (repeat)
18. Which girl can say "My hair is long"? (repeat)
19. Place an "X" on the red circle. (repeat)
20. Put an "X" on the striped rectangle. (repeat)

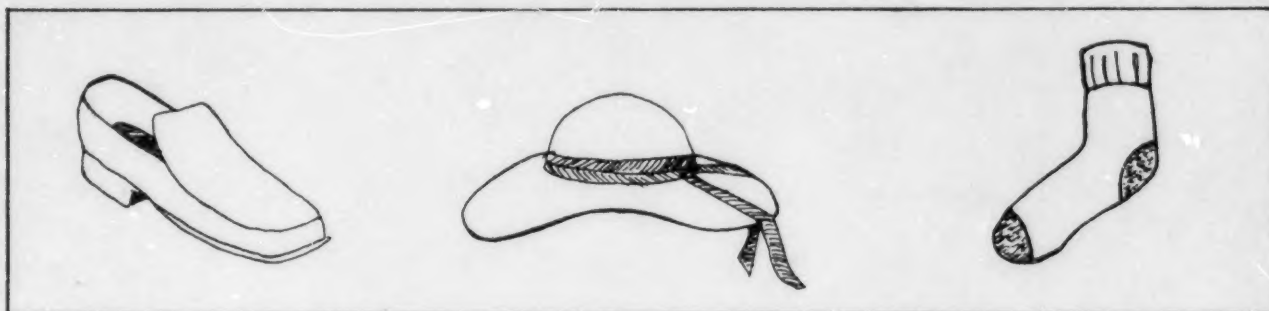
TEST OF CONCEPTS IN THE DISTAR LANGUAGE I PROGRAM

<u>Question</u>	<u>Concept Measured by the Question</u>
1	Names of Objects
2	Names of Objects
3	"Empty"
4	Action Verb "Walking"
5	"Long"
6	Superlative "Shortest"
7	Body Part "Head"
8	Part of an Object
9	"In Front of"
10	"Between"
11	Superlative "Widest"
12	"Not"
13	"On"
14	"Not"
15	Body Part "Leg"
16	Action Verb "Eat"
17	Verb Tense "Has Climbed"
18	"My" and "Long"
19	Colours
20	Multiple Attributes and Geometric Figures

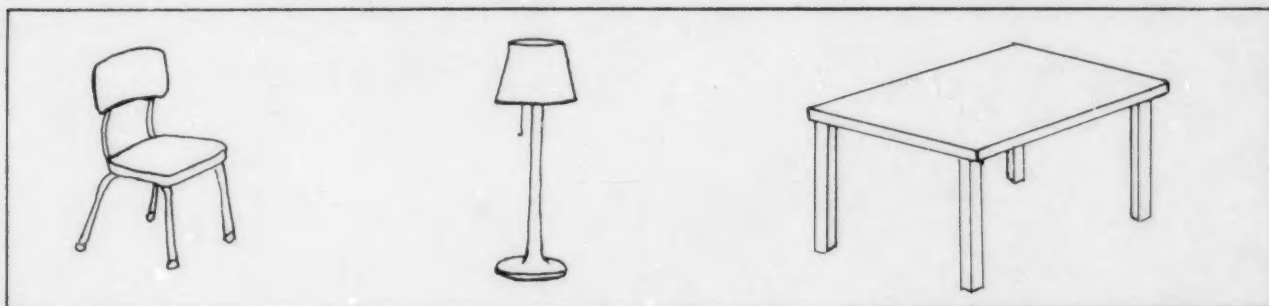
Test Of Concepts In The DISTAR Language Program

Name _____

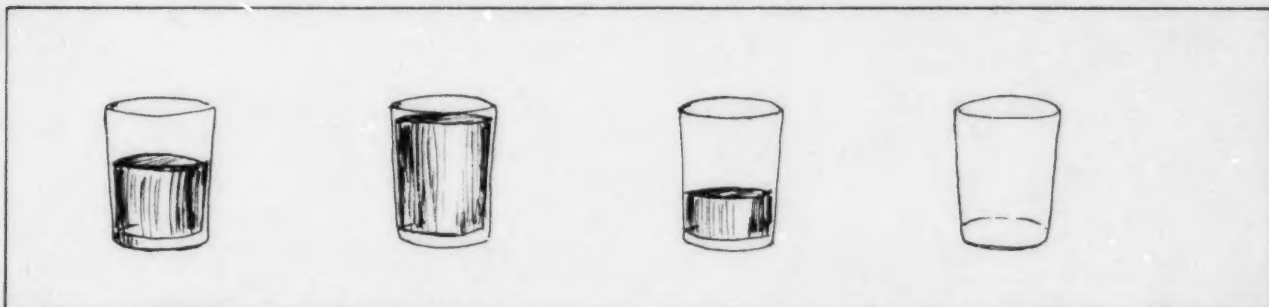
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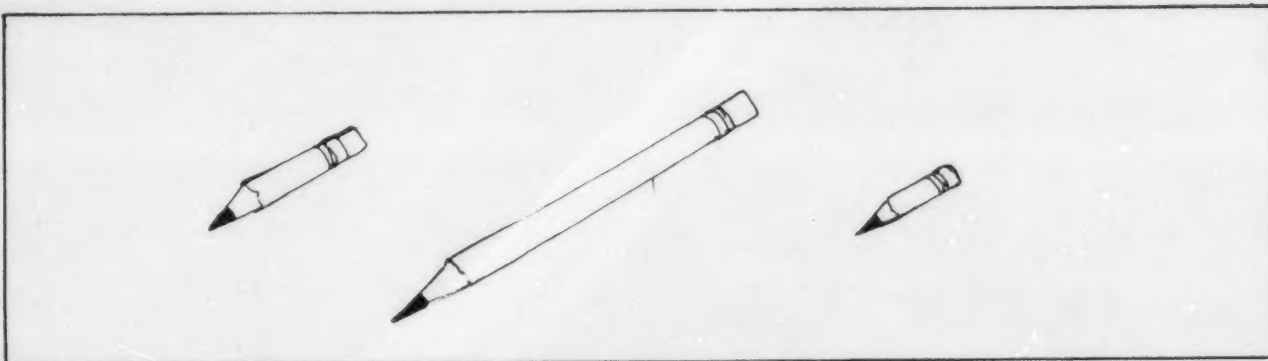
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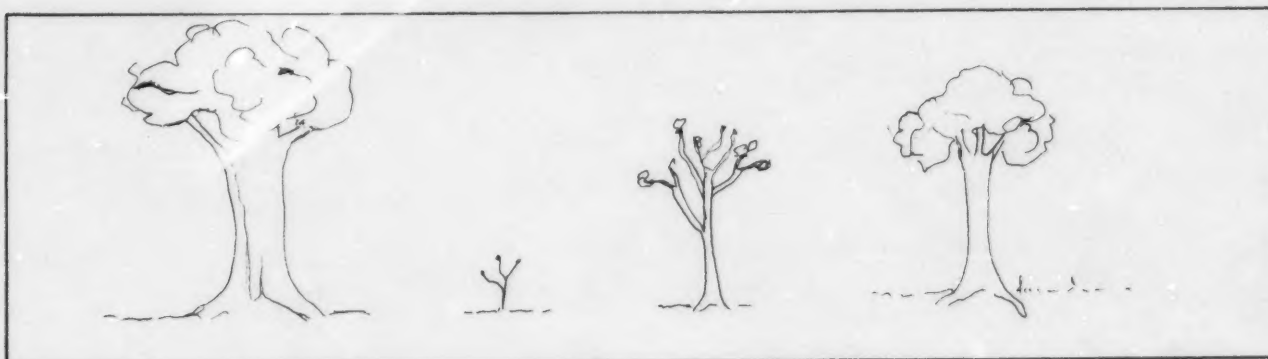
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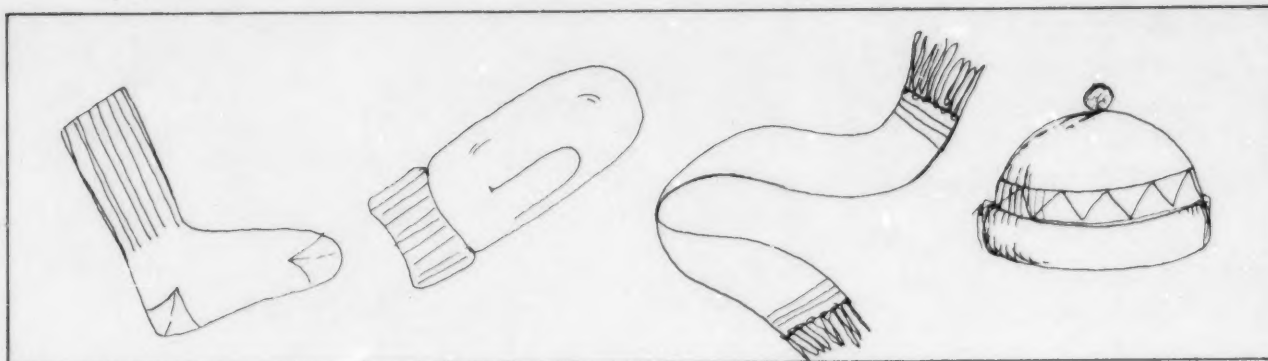
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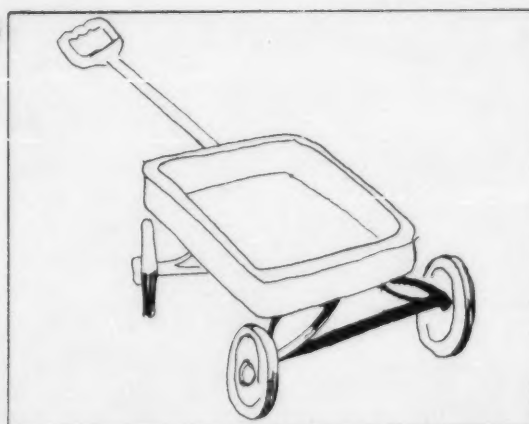
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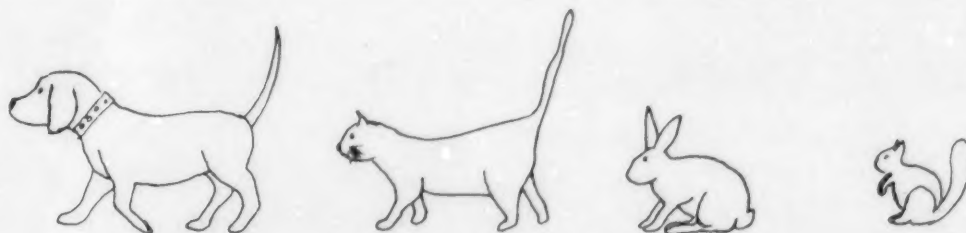
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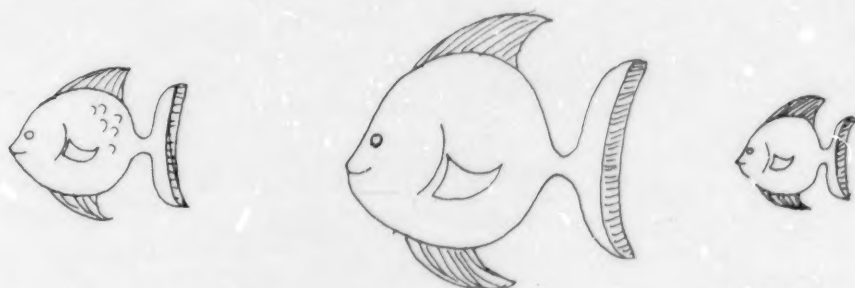
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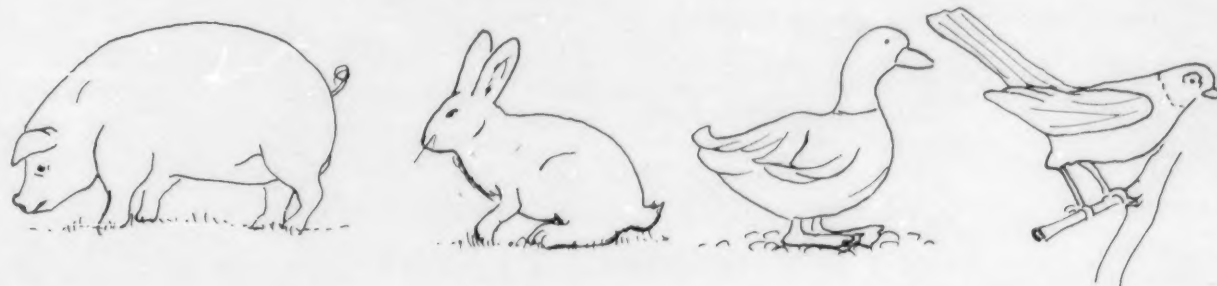
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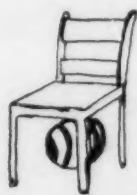
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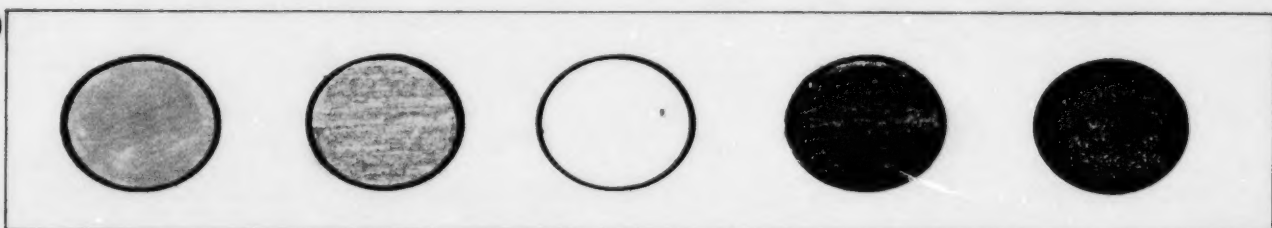
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